

block-by-block basis, and code words in each ECC block, in each sector, or in each sector group, on a string-by-string basis;

said system control means comprises:

an means-basis ECC block pipeline processing notification sub means

5 for transmitting ECC blocks which have been subjected to error correction downstream; for storing ECC blocks to be processed next to said ECC-block-basis buffer memory; and for making the storage known to said bus control means, said syndrome calculating means, said error detecting means, and said error correcting means;

10 a means-basis ECC block code word recognition sub means for selecting code words of the ECC blocks to be processed, in accordance with the contents stored in said ECC-block-and-code word-division storing means, in controlling a data transfer from said bus control means to said syndrome calculating means, to said error detecting means, and to said
15 error correcting means for error detection and error correction; in controlling the error correction done by said error correcting means; in controlling writing of error-corrected data to said ECC-block-basis buffer memory done by said bus control means; in storing mid-term results to said ECC-block-and-code word-division storing means by said error detecting
20 means; and

an ECC block code word recognition sub means in sub means-basis pipeline processing for making said first error detecting sub means, said even-numbered error correction sub means, said even-numbered error correction sub means, said number-of-times control sub means, and said
25 DMA transfer instruction sub means in said system control means

recognize that the error-corrected ECC blocks have been transmitted downstream and new ECC blocks to be processed have been stored in said ECC-block-basis buffer memory, and further making these same sub means contained in said system control means recognize the ECC blocks and the
5 code words which are to be processed therein.

17. The error correction device of claim 9, wherein error correction is performed in parallel for data in a plurality of ECC blocks each having a structure where a plurality of error correcting code words each comprising
10 a data unit and a parity unit are arranged in vertical direction and horizontal direction so as to repeat error correction a plurality of number of times, and where predetermined data composed of a predetermined number of code words in the vertical direction or the horizontal direction (data in the horizontal direction are referred to as sector) as a unit are
15 subjected to the error correction;

said buffer memory is an ECC-block-basis buffer memory for storing, on a block-by-block basis, ECC blocks to be processed in parallel;

said storing means for storing mid-term results of an error detecting process generated by said error detecting means is an ECC-block-and-code
20 word-division storing means for storing ECC blocks in process on a block-by-block basis, and code words in each ECC block, in each sector, or in each sector group, on a string-by-string basis;

said system control means comprises:

an means-basis ECC block pipeline processing notification sub means
25 for transmitting ECC blocks which have been subjected to error correction

downstream; for storing ECC blocks to be processed next to said ECC-block-basis buffer memory; and for making the storage known to said bus control means, said syndrome calculating means, said error detecting means, and said error correcting means;

- 5 a means-basis ECC block code word recognition sub means for selecting code words of the ECC blocks to be processed, in accordance with the contents stored in said ECC-block-and-code word-division storing means, in controlling a data transfer from said bus control means to said syndrome calculating means, to said error detecting means, and to said
- 10 error correcting means for error detection and error correction; in controlling the error correction done by said error correcting means; in controlling writing of error-corrected data to said ECC-block-basis buffer memory done by said bus control means; in storing mid-term results to said ECC-block-and-code word-division storing means by said error detecting
- 15 means; and

- an ECC block code word recognition sub means in sub means-basis pipeline processing for making said first error detecting sub means, said even-numbered error correction sub means, said even-numbered error correction sub means, said number-of-times control sub means, and said
- 20 DMA transfer instruction sub means in said system control means recognize that the error-corrected ECC blocks have been transmitted downstream and new ECC blocks to be processed have been stored in said ECC-block-basis buffer memory, and further making these same sub means contained in said system control means recognize the ECC blocks and the
- 25 code words which are to be processed therein.